A multi-lingual data base for bone scintigraphy with concept-oriented access under the World Wide Web (WWW)

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A multi-lingual data base for bone scintigraphy with instructive patient cases which is accessible under the WWW will be presented. It includes structured case records based on images and clinical information provided in different European languages. In order to support the retrieval of cases clinical information is represented in a language independent way by means of a formalized compositional concept system. This design allows for accessing cases under various clinical aspects and detail using different languages. Patient cases are being collected from several European centers in Germany, England, Hungary, Slavonia and Spain. The concept system for indexing cases and the multi-lingual vocabulary have been developed under the European COST B2 project - Quality Assurance in Nuclear Medicine Software.

INTRODUCTION

Clinical case records are often used in imaging for education, training and decision making. In recent time there is an increasing number of projects presenting case records under the WWW, since this medium supports fast cooperative development, inexpensive distribution, and easy world-wide access. For small clinical data bases it is sufficient to present cases by images with clinical annotations ordered with respect to different disease categories. However, if the number of cases is growing and contribution is on an international level methods are demanding for organizing cases with respect to multiple views and for supporting multi-lingual access and presentation of clinical information. A multi-lingual data base for bone scintigraphy will be demonstrated which is currently being developed by several European centers under the WWW[1]. Cases are indexed language independently using a formal concept system supporting the retrieval of case records according to nosological, topographical or phenomenological characteristics.

METHODS

A case record is given a uniform structure consisting of one or more diagnoses that relate to the patient case, a global case description summarizing the clues of the case, and a list of clinical studies in temporal sequence. Clinical studies comprise images of either whole body scans, SPECT, X-ray or NMR each with a textual description of the findings. Diagnoses, global case descriptions and findings are provided in several languages, currently German, English, Spanish, and Hungarian. Diagnoses and findings are indexed language-independently using a domain concept system and a compositional concept representation formalism. The underlying concept system has been developed for a report generating system for bone scintigraphy[2]. It has been harmonized and translated by the cooperating centres. For the retrieval of case records the user can enter query descriptions using compositional menues with language-specific terms. These menues allow for entering kinds of abnormalities, topographical descriptions or diagnoses. The query is processed by a formal classifier which considers both generic and partitive concept relations[3]. For instance, a query for case records presenting a benign tumor at the spine will find for example a case with an exostosis at a lumbar vertebra.

RESULTS

The data base and the concept system are implemented using the object-oriented data base system POET. The WWW interface for entering queries and for the presentation of case records has been realised using Java and CGI-Scripts. Currently some 100 case records from several departments of nuclear medicine in Germany, Spain, Hungary and England are integrated.

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